

Highlights from the ESACT Frontiers Retreat 2025

Ljubljana played host to the 5th ESACT Frontiers Retreat this June, bringing together early-career researchers from across Europe for three days. The event aimed to showcase the latest advances in animal cell technology whilst encouraging collaboration between academia and industry. To that end, the programme featured interactive workshops, poster and oral presentations, as well as plenty of social activities, including a team building treasure hunt around Ljubljana. More than anything, the retreat served as an important reminder that our work does not happen in silos and that, by engaging with researchers from different disciplines, we gain fresh perspectives and spark new ideas.

I was proud to contribute to the programme with both a poster and an oral presentation on my PhD research: *“Beefing Up Cultivated Meat Production with Mycelial Microcarriers”*. The talk led to valuable discussions around attachment surface area, hyphal fibre stiffness, how to reliably assess animal component-free media and the trade-offs between cost, performance and scalability. The retreat’s interdisciplinary nature made it the perfect setting to share early-stage work and gain feedback from peers working on a variety of different projects, such as viral vectors and cell line engineering.

Amongst the many standout sessions, Michael Heath’s soft skills workshops were a personal highlight. He challenged us to rethink how we present our work, offering practical tools for effective science communication and leadership. The first session encouraged us to tell stories rather than overload everyone with jargon and data. We explored how to structure narratives using approaches like “What → So What → Now What” and “What Is → What Could Be”, and discussed the importance of visual aids, story arcs and knowing our audience’s priorities. A memorable takeaway was the reminder that if we can’t explain our research simply, we may not fully understand it ourselves; a challenge that resonated with many of us presenting niche, technical work.

The second session tackled the complexities of leading without authority in interdisciplinary teams. Michael introduced us to Cialdini’s seven principles of influence, emphasising techniques like reciprocity and unity as powerful tools for gaining support. We also discussed how to build trust through credibility and intimacy, whilst managing self-orientation. Particularly useful were the ‘Judy Ringer’ conversation openers, phrases designed to invite dialogue and avoid defensive retaliation, which I’ll definitely be using in future collaborations. The workshops were a valuable opportunity to reflect on how we communicate and lead.

The oral presentations also offered no shortage of inspiration. Lisa Wolff’s *“Matrix Matters”* introduced a practical framework for selecting xeno-free scaffolds in organoid culture. Her OSCAR

radar plot and matrix selection checklist enabled quantitative assessment. Maibritt Kretschmer's presentation on using stiffness as a selection criterion highlighted the importance of mechanical cues in 2D and 3D cultures. Her findings reinforced the need to consider biomechanical environments when designing scaffolds. Our follow-up discussion even led to the discovery of a technique I'll use to quantify the stiffness of my own materials. On the metabolic side, "*DIY Amino Acids*" by Alena Adler showcased an approach to making CHO cells more self-sufficient by engineering them to synthesise essential amino acids. This has huge implications for cost reduction and process simplification in biopharmaceutical manufacturing and, perhaps someday, cultivated meat production too. Sheryl Lim's "*Dial-A-Sugar*" added a layer of synthetic biology finesse to the retreat. Her work on inducible glycosylation enzyme circuits using random and targeted genome integration methods illustrated how precise control over post-translational modifications could be achieved. Just as impressive as the science was her communication style; her clever incorporation of The Powerpuff Girls, a popular 90s children's TV programme, transformed a complex topic into something engaging and memorable for a broad audience.

Finally, the social activities, including the terrace networking reception and the gala dinner at Ljubljana Castle, reminded us that community is just as important to scientific progress as lab work. Overall, ESACT Frontiers 2025 struck a brilliant balance between technical depth and human connection. In addition to novel ideas and a renewed sense of purpose, I left with new friends.

